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ABSTRACT

Two ethnic groups of students, majority and minority, were compared on variables of a Psychological Productivity Model. Black and Hispanic students were grouped as minorities, and White students were considered majority students. Participants were 120 high school students from an urban high school in the Southwest. The Psychological Productivity Model entailed seven variables (home, social environment, time on task, motivation, quality of instruction, peer group, and media). Sex differences on the variables were also examined. Descriptive statistics and seven separate two-way analyses of variance were performed on the data. The variables Ethnicity and Sex both showed significant main effects on the variable Motivation, favoring the majority ethnic group and males, respectively. The results, however, fail to reveal any significant interactions. No significant main effects for the variables Ethnicity and Sex were found on the remaining six dependent variables. The results of the study reflect the need for further and more intensive, in-depth research on ethnic and sex differences on motivation. Results have implications for curriculum design. Five tables present study findings. (Contains 24 references.) (SLD)

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A Comparison of Majority and Minority Students on Variables of an Educational Productivity Model

ED 362 532

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Running head: Ethnic Comparison on Educational Productivity

A Comparison of Majority and Minority Students on Variables of an Educational Productivity Model

ABSTRACT

The purpose of this study was to compare two ethnic groups of students (majority and minority) on variables of a Psychological Productivity Model. The Psychological Productivity Model entailed seven variables (Home, Social Environment, Time on Task, Motivation, Quality of Instruction, Peer Group, and Media). Sex differences on the variables were also examined. Descriptive statistics and seven separate two-way ANOVA's were performed on the data. The variables Ethnicity and Sex both showed significant main effects on the variable Motivation favoring the majority ethnic group and males, respectively. The results, however, failed to reveal any significant interactions. No significant main effects for the variables Ethnicity and Sex were found on the remaining six dependent variables. The results of the study reflect the need for further and more intensive, indepth research on ethnic and sex differences on motivation. Thus, the results have implications for curriculum design.

Theoretical Framework/Objectives

There is a widespread concern among educators and the general public sector about students' academic achievement, especially minority students. The issues surrounding students' academic achievement are intensely debated. Even more vigorously debated are educational interventions that can be utilized to significantly accelerate minority students' academic achievement (Fuhram, 1988).

One area of research which has potentials for improving minority students' academic achievement is that of students' perceptions of their use of seven variables (Home, Social Environment, Time, Motivation, Quality of Instruction, Peer, and Media) included on a "Psychological Educational Productivity Model" (Uguroglu & Walberg, 1986b). Recent studies have begun to examine students' perceptions of the variables on the Educational Productivity Model. This research implies that students' academic achievement can be improved by examining many variables in combination that have shown strong, positive, significant effects on academic achievement rather than investigating a few factors separately at the cost of deterioration of other significant variables and by further assessing how students perceive these variables in their pursuance of academic goals (Good, Biddle, & Brophy, 1975; Uguroglu & Walberg, 1986).

Research has consistently shown that the variables on the Psychological Educational Productivity Model are significantly related to academic achievement. Walberg (1982) and Walberg, Schiller, and Haertel (1979), for example, propose that the variables Home, Time on Task, and the Social Environment are strongly correlated with students' achievement. Jencks (1972) strongly pointed out that the variable Peer Group has one of the greatest influences on students' academic achievement. The variable Home has been posited as so influential on students' academic achievement that it supersedes the 12 years of formal schooling (Jencks, 1973).

Academic achievement has also been described as a function of the variable Time (Fredrick & Walberg, 1980). The allocation of adequate time in addition to the variable Quality of Instruction enable the majority of students to achieve mastery of subject matter (Bloom, 1976). Good, Biddle, & Brophy (1975) strongly argue that the quality of teaching consistently affects student learning in predictable ways. The quality of teaching

is primarily articulated in teaching styles which entail strategies of questioning, structuring of activities, clarity of presentations, and the classroom environment (Silvernail, 1979). Brophy and Everston (1981) and Westcott (1978) also point out that the variable Quality of Instruction is closely related to students' achievement.

Several researchers propose that the variable Media suggest an instructional function and enhance students' achievement (Olson & Bruner, 1974; Salomon, 1979, 1988) by complementing the process within which representations are constructed and procedures performed (Kozma, 1991). Each medium enhances information processing by cultivating new skills for explorations and internal representations (Olson & Bruner, 1974). Thus, media are both complementary and supplementary to instructions.

There is a growing body of research which favors motivation as an influential factor on academic achievement. The focus ranges from dimensions of self perception to students' persistence on academic tasks. The theoretical framework in which motivation is used in this study surrounds students' willingness to preserve on learning tasks. This persistence on tasks in addition to their perceptions of motivational process influence their acquisition of knowledge and use of skills (Dweck, 1986). It is evident that motivation influences academic achievement in overall school achievement, especially reading and mathematics (Uguroglu, Schiller, & Walberg, 1981; Uguroglu & Walberg, 1979, 1986) and also feelings that emanate from how an outcome is evaluated (Weiner, 1986).

Since the preceding variables (Home, Social Environment, Time on Task, Motivation, Quality of Instruction, Peer Group, and Media) on the Psychological Educational Productivity Model have shown significant effects on students' academic achievement and "majority" students have demonstrated higher academic achievement than "minority" students (Graham & Long, 1986; Rosenfeld & Hilton, 1971; Willig, Harnish, Hill, & Maehr, 1983), the objective of the present study is to compare majority and minority students' perceptions of these variables in their academic achievement. More specifically, the objective of the present study is to determine if majority and minority students differ significantly on the variables included on the Educational Productivity Model. Another objective of the study is to examine sex differences on the variables on the Educational Productivity Model.

Method

Subjects

The participants in the present study were 120 students from grades 9, 10, 11, and 12. The Black students and Hispanics students were grouped as minorities while students included as members of the white race were considered the majority. The students were selected from a particular high school in a metropolitan school district in the Southwestern Region of the United States.

Instrument

The Psychological Educational Productivity Model (Uguroglu & Walberg, 1986) was the self-report instrument utilized in the present study. The Psychological Educational Productivity Model is a questionnaire that measures the constructs of Home, Social Environment, Time on Task, Motivation, Quality of Instruction, Peer Group, and Media. The instrument has been found to have test-retest reliability and construct and predictive validity. A brief description of the scales follows:

Motivation- Students' willingness to persevere intensely on learning tasks.

Time on Task- The amount of time students engage in learning.

Home- The educational stimulation provided by the family outside of school.

Social Environment- The interpersonal skills in the classroom.

Quality of Instruction- Students' perception of the psychological and curricular aspects of teachers' methods of teaching.

Peers Group- Students enrolled in the same classes.

Media- Learning from audiovisuals and from printed materials such as newspapers and magazines.

Procedure

During the Fall of 1991-92 school year, all students completed the instrument which was distributed and administered concurrently by the homeroom teachers. Students were informed by the homeroom teachers that the questionnaire was not a test and would not be viewed by their teachers. They were then instructed to write their student identification (ID) number on the questionnaire. The questionnaire required approximately 20 minutes to complete. The questionnaires were collected immediately following completion by a student representative and then secured in large envelopes. The envelopes were taken to grade-level counselors and then collected by the researcher.

A student-ID roster was obtained from the attendance office and the students' ID numbers were matched with their names. The names were written on the survey. The surveys were arranged by ethnicity. Students were then randomly selected from the minority group and the majority group.

Data Analysis

Descriptive statistics which included means, standard deviations, and Pearson's product-moment coefficients; and 2 x 2 factorial analysis of variance (ANOVA) were utilized to compute the data. Since the Psychological Educational Productivity Model involved seven scales which were utilized as dependent variables, seven separate two-way ANOVA's were performed. The two-way ANOVA indicates significant main effects of the two factors (independent variables) Ethnicity and Sex on each of the seven dependent variables (Home, Social Environment, Time, Motivation, Quality of Instruction, Peer, and Media) and the interactions showing the effect on the dependent variables of the two independent variables (Ethnicity and Sex) operating together.

Results

The variables were on a five-point likert scale. The results of the descriptive statistics of the means among all the variables indicated that the Variable Motivation had the highest mean (3.99) and the variable Social Environment the lowest (3.04). The standard deviations were overall less than one. Table 1 depicts these results.

The variable Motivation also had the highest mean for the majority and minority groups on ethnic group comparison but was higher for the majority (4.08; 3.92), respectively. The variable Social Environment indicated the lowest mean for both ethnic groups but lower for the majority group than for the minority group (3.02; 3.07), respectively. The standard deviations for all scales were slightly above one to less than one. These results of descriptive statistics for ethnic group comparison are reported in Table 2.

On sex comparison in Table 3, the variable Motivation suggested the highest mean which favored males over females (4.21; 3.87), respectively. The lowest means on sex were the variables Quality of Instruction for males (3.15) and Social Environment for females (2.98). The standard deviations again were less than one except for the variable Home (SD = 1.05).

The results of the correlation matrix in Table 4 revealed the variable Motivation had the strongest relationship with the variables Sex ($r=.33$, $p<.001$) and Ethnicity ($r=.17$). The relationship between the variables Ethnicity and Motivation, however, was not statistically significant. The remaining correlations among the variables were negligible. The correlation matrix was computed from Pearson's product-moment coefficients.

The two way ANOVA's indicated a positive main effect for the variable Ethnicity on the variable Motivation ($F=4.17$, $p< .05$) and also for the variable Sex on the variable Motivation ($F=14.99$, $p <.05$). There was no significant interaction, however, between the variables Ethnicity and Sex. These results are displayed in Table 5. The Scheffe's post hoc test was performed to determine which ethnic group mean and which sex mean was significantly different from the other. The results of the Scheffe's test showed that the mean for the majority group on the variable Motivation (4.08) was significantly higher than the mean for the minority group (3.92) and that the mean for males on the variable Motivation (4.21) was significantly higher than for females (3.87). None of the other

variables on the Psychological Educational Productivity Model showed main effects.

Conclusion, Discussion, and Implications

Interestingly, both the variables Ethnicity and Sex differed on the variable Motivation. The main effect of the variable Sex was stronger on the variable Motivation than was the variable Ethnicity. There were no ethnic or sex differences found on the remaining six variables of the Educational Productivity Model.

The results of this study should be considered in the context of the students' experiences. A number of studies support the present finding of students of the majority ethnic group demonstrating higher levels of motivation than students representing the minority ethnic group. On the other hand, a similar amount of research exists that contradicts the preceding finding and favor minority students' motivational level as higher than the motivational level of majority students. Succinctly, the motivation difference between majority and minority students is contradictory and inconsistent, especially between black students and white students (Graham, 1988). These results, subsequently, suggest the need for further research on ethnic and sex differences on motivation utilizing a range of motivation constructs that have been found to guide academic achievement.

The variable Social Environment which exhibited the lowest mean for both ethnic groups and for females should attract future research on improving students' classroom environment which previous research has found to be consistently related to academic achievement. Moreover, the results of the present study have implications for future research and curriculum design in the education of minority students. More attention should focus, especially, on minority motivation.

Table 1

Means and Standard Deviations of the Variables on the Educational Productivity Model

Variables	M	SD
Home	3.37	1.02
Social Environment	3.04	.60
Time on Task	3.44	.55
Motivation	3.99	.48
Quality of Instruction	3.09	.64
Peer	3.22	.56
Media	3.48	.69

Table 2

Means and Standard Deviations of All Variables by Ethnicity

Variables	Majority		Minority	
	M	SD	M	SD
Home	3.42	1.12	3.31	.89
Social Environment	3.07	.61	3.02	.59
Time on Task	3.45	.54	3.42	.55
Motivation	4.08	.50	3.90	.43
Quality of Instruction	3.12	.68	3.06	.59
Peer	3.24	.61	3.20	.48
Media	3.39	.70	3.61	.66

Table 3

Means and Standard Deviations of All Variables by Sex

Variables	Males		Females	
	M	SD	M	SD
Home	3.32	.99	3.40	1.05
Social Environment	3.19	.53	2.98	.62
Time on Task	3.54	.48	3.39	.57
Motivation	4.21	.40	3.87	.48
Quality of Instruction	3.15	.69	3.06	.61
Peer	3.27	.55	3.20	.56
Media	3.43	.66	3.51	.71

Table 4

Intercorrelations Among All Variables

		2	3	4	5	6	7	8	9
1. Home	-	.19*	.34***	.15	.30***	.14	.41***	.04	.05
2. Social Environment	-	-	.50***	.40***	.59***	.32***	.19*	.17	.04
3. Time	-	-	-	.53***	.61***	.12	.29**	.13	.03
4. Motivation	-	-	-	-	.41***	.25**	.27**	.33***	.17
5. Quality of Instruction	-	-	-	-	-	.27**	.30***	.07	.05
6. Peer	-	-	-	-	-	-	.26**	.06	.04
7. Media	-	-	-	-	-	-	-	.06	.16
8. Sex	-	-	-	-	-	-	-	-	.06
9. Ethic Group	-	-	-	-	-	-	-	-	-

*p < .05
**p < .01
***p < .001

Table 5

Seven Separate Two-Way ANOVA's of Educational Productivity Scales

Scale	Ethnicity (E)	Sex (S)	E x S	Within
Home				
MS	.38	.19	.06	1.07
F	.35	.18	.05	
Social Environment				
MS	.08	1.22	.09	.35
F	.22	3.45	.23	
Time on Task				
MS	.02	.58	.39	.30
F	.08	1.96	1.32	
Motivation				
MS	.83	3.03	0.00	.20
F	4.13*	14.99*	0.00	
Quality of Insttruction				
MS	.11	.21	.24	.41
F	.26	.51	.58	
Peer				
MS	.05	.15	.03	.32
F	.16	.47	.10	
Media				
MS	.45	.20	.36	.47
F	3.07	.42	.77	

*$p < .05$

References

Bloom, B.J. (1976). Human characteristics and school learning. New York: McGraw-Hill.

Brophy, J.E., & Everston, C. (1981). Student characteristics and teaching. New York: Longman.

Brown, L. 1986). Taking advantage of media. Boston: Boutledge & Kegan Paul.

Dweck, C.S. (1986). Motivational processes affecting learning. American Psychologist, 41, 1040-1048.

Fredrick, W.C., & Walberg, H.J. (1980). Learning as a function of time. Journal of Educational Research, 73, 183-194.

Fuhram, S. (1988, March). An overview. Phi Delta Kappan, 69 (7), 486-487.

Good, T.L., Biddle, B.J., & Brophy J.E. (1975). Teachers make a difference. New York: Holt, Rinehart, & Winston.

Graham, S. (1988). Can attribution theory tell us something about motivation in blacks? Educational Psychologist, 23, 3-21.

Graham, S., & Long, A. (1986). Race, class, and the attributional process. Journal of Educational Psychology, 78, 4-13.

Jencks, C. (1972). Education vouchers. In F. Sciara and R. Jantz (Eds.), Accountability in American education (pp. 4-7). Boston: Allyn & Bacon.

Jencks, C. (1973). Inequality, a reassessment of the effect of family and schooling in America. New York: Harper & Row.

Kozma, R.B. (1991). Learning with media. Review of Educational Research, 61 (2), 179-211.

Olson, D.R., & Bruner, J.S. (1974). Learning through experience and learning through media. In D.E. Olson (Ed.), Media and symbols: The forms of expression, communication, and education (pp.125-150). Chicago: National Society for the Study of Education.

Rosenfeld, M., & Hilton,T.L. (1971). Negro-white difference in adolescent educational growth. American Educational Research Journal, 8, 231-246.

Salomon, G. (1979). Interaction of media, cognition, and learning. San Francisco: Jossey-Bass.

Salomon, G. (1988). AI in reverse: Computer tools that turn cognitive. Journal of educational Computing Research, 4 (2), 123 - 134 .

Silvernail, D.L. (1979). Teaching styles as related to student achievement: What research says to the teacher. Washington, D.C.: National Education Association. (ERIC Reproduction Service No. ED 177156)

Uguroglu, M.E., Schiller, D.P., & Walberg, H.J. (1981). A multidimensional motivation instrument. Psychology in the schools, 18, 279-285.

Uguroglu, M.E. & Walberg, H.J. (1979). Motivation and achievement: A quantitative synthesis. American Education Research Journal, 16, 375-389.

Uguroglu, M.E., & Walberg, H.J. (1986). Predicting achievement and motivation. Journal of Research an Development in Education, 19 (3), 1-8.

Walberg, H.J. (1982b). What makes schooling effective? Contemporary Education Review, 1, 1-34.

Walberg, H.J., Schiller, D., & Haertel, G.D. (1979). The quiet revolution in educational research. Phi Delta Kappan, 61, 179-183.

Westcott, W.L. (1978). Effects of teacher modeling on the subsequent behavior of students. Dissertation Abstracts International, 38, 6605A.

Willig, A.C., Harnisch, D.L., Hill, K., & Maehr, M. (1983). Sociocultural and educational correlates of success-failure attributions and evaluation anxiety in the school setting for Black, Hispanic, and Anglo children. American Educational Research Journal, 20, 385-410.